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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,125	06/06/2001	Seiji Ohshima	009683-376	7886

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EXAMINER

LEE, TOMMY D

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/874,125	Applicant(s) OHSHIMA, SEIJI	
	Examiner Thomas D. Lee	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-17 is/are allowed.
- 6) ☒ Claim(s) 1, 6-8 and 14 is/are rejected.
- 7) ☒ Claim(s) 2-5 and 9-13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20010904</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,610,999 (Bannai et al.).

Regarding claim 8, Bannai et al. disclose an image processing apparatus, comprising: an input unit successively inputting a first image signal representing density level of each pixel (digital data representing 256 levels entered through data line 100 (column 3, lines 46-48)); a thresholding unit generating a second image signal by comparing the first image signal input from said input unit with a threshold value (binarization circuit 1 releases binarized signal on data line 200 (column 3, lines 50-52));

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and a calculating unit calculating, based on said first image signal, said second image signal and the threshold value used for generating said second image signal, a threshold value to be used for thresholding a succeeding pixel (binarization circuit 1 effects binary digitization of succeeding pixel based on information from threshold value setting circuit 2, edge detection circuit 3 and window judging circuit 4 (column 3, lines 46-52); threshold value setting circuit, edge detection circuit and window judgment circuit provide signals to binarization circuit based on digital data and binarized signal (column 3, line 52 – column 4, line 3); threshold value for succeeding pixel inherently based on current threshold value, since current threshold value determines the value of binarized signal that is used in calculating succeeding threshold value via threshold value setting circuit, edge detection circuit and window judgment circuit (Fig. 1)).

Claim 14 is a method claim corresponding to above-rejected apparatus claim 8.

The method steps are performed by the apparatus disclosed in Bannai et al., as set forth above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bannai et al. in view of U.S. Patent 5,553,166 (Kakutani).

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Regarding claims 1 and 7, Bannai et al. disclose an image processing apparatus comprising: an input unit successively inputting a first image signal representing density level of each pixel (digital data representing 256 levels entered through data line 100 (column 3, lines 46-48)); a thresholding unit generating a second image signal by comparing the first image signal input from said input unit with a threshold value (binarization circuit 1 releases binarized signal on data line 200 (column 3, lines 50-52)); and a calculating unit calculating, based on the second image signal generated by said thresholding unit and the threshold value used for generating the second image signal, a threshold value to be used for thresholding a succeeding pixel (binarization circuit 1 effects binary digitization of succeeding pixel based on information from threshold value setting circuit 2, edge detection circuit 3 and window judging circuit 4 (column 3, lines 46-52); threshold value setting circuit, edge detection circuit and window judgment circuit provide signals to binarization circuit based on digital data and binarized signal (column 3, line 52 – column 4, line 3); threshold value for succeeding pixel inherently based on current threshold value, since current threshold value determines the value of binarized signal that is used in calculating succeeding threshold value via threshold value setting circuit, edge detection circuit and window judgment circuit (Fig. 1)).

Bannai et al. do not disclose a changing unit for enlarging or reducing at least one of a range of the first image signal input from said input unit and range of the threshold value calculated by said calculating unit (claim 1), or changing ratio of a range of the first image signal input from said input unit and a range of the threshold value calculated by said calculating means (claim 7). In Kakutani, a prior art application is

discussed, wherein the range of threshold values is changed in accordance with the value of input data (column 2, lines 40-50). As can be seen from the respective input and threshold ranges, a ratio of the two ranges does not remain constant. By this method, a delay in the generation of white dots at a high density region and generation of black dots at low density regions is averted (column 2, lines 28-41), thereby enhancing the quality of the output image. Therefore, it would have been obvious for one of ordinary skill in the art to modify the teaching of Bannai et al., by providing a means for changing ranges of threshold values corresponding to changes in a range of input values, as in the prior art application disclosed in Kakutani.

Claim 6 is a method claim corresponding to above-rejected apparatus claim 1. The method steps are performed by the apparatus suggested by the combined teachings of Bannai et al. and Kakutani, as set forth above.

Allowable Subject Matter

7. Claims 15-17 are allowed.
8. Claims 2-5 and 9-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest a changing unit changing the range of the first input signal, the unit including a variable unit changing a coefficient used for changing the range, as recited in claims 2 and 3; or a changing unit changing the range of the threshold value, the unit including a variable unit changing a coefficient

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used for changing the range, as recited in claims 4 and 5; or a calculating means calculating the threshold value using difference between said second image signal and the threshold value used for generating said second image and difference between said first image signal and said second image signal, as parameters, as recited in claims 9-11; or first and second multiplying units multiplying the first image signal input to said thresholding and calculating units by prescribed first and second coefficients, respectively, as recited in claims 12, 13 and 15-17.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,614,556 (Hong et al.) discloses an apparatus for quantizing a digital image, with a threshold modulator for changing a threshold value input to a quantization unit, based on input and output image data.

U.S. Patent 6,625,327 (Ohshima et al.) discloses an apparatus for quantizing a digital image, wherein a corrected threshold value is generated, based on output image data and threshold value from a threshold value generating unit.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (703) 305-4870. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (703) 308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas D. Lee
Primary Examiner
Art Unit 2624

tdl

November 24, 2004